Extreme global weather

Description

The UK may be experiencing what looks likely to be a milder than average winter but other parts of the globe are struggling against some extreme weather conditions.

Middle East

Heavy snow is expected to affect large parts of Turkey, Georgia, Armenia and SW Russia early this week. As the cold conditions spread east later in the week, strong to gale force winds and heavy snow are expected across more eastern parts of the Mediterranean.

This will lead to the Middle East seeing temperatures 10 or 15C below normal for the time of year. For example, overnight temperatures could fall to -10C in Syria by mid week, with daytime temperatures struggling to rise above freezing.

This is likely to have a significant impact on refugees and the humanitarian aid agencies in Turkey, Jordan, Lebanon, Syria and Iraq, with problems enhanced by the threat of frozen water supplies. Although overnight temperatures of -5 to -10C are expected, these values may well fall much lower if there is snow cover.

North America and Canada

Large areas of the USA and Canada are experiencing very cold conditions, with the threat of heavy snowfall across some parts over the coming days.

The eastward movement of a cold front over the weekend has dragged very cold air down from the arctic. Temperatures across parts of Canada have fallen to -30C, and widely across North America, daytime temperatures have ranged between 0 and -6C, with the bitterly cold conditions enhanced by strong winds.

As well as the low temperatures, some parts have seen heavy snowfall, such as the Pacific Northwest and areas to the east of the Great Lakes.

Further heavy snowfall is expected this week, particularly down-wind of the Great Lakes due to “lake effect” snow. This is caused when cold flows across relatively warm bodies of water such as the Great Lakes. The air rises in strong convective currents which creates clouds and heavy precipitation. In these very cold conditions, the moisture in the clouds will fall as snow.

Lake Superior (top left) and Michigan (centre) can be seen generating ‘lake effect’ snow. Provided by the SeaWiFS Project, NASA/Goddard Space Flight Center, and ORBIMAGE

The significance of this is highlighted by snowfall projections over the coming days. Lake Ontario, the easternmost of the Great Lakes with a surface area of 18,960 km^2, is expected to bring narrow bands of heavy snow to areas east of the lake. These narrow bands could generate 2-3 feet of fresh snow over the next 24-36 hours causing significant disruption.

Whilst the freezing temperatures are expected to last throughout the week, temperatures may recover slightly through the weekend.

Will the US weather affect the UK?

The cold conditions will have the effect of strengthening the jet stream, which will move close to the UK over the coming days. This will bring unsettled conditions through this week, with spells of wet and windy weather, particularly across northwestern parts of the country. However, it will be mild, particularly towards the end of the working week when daytime temperatures could reach around 14C.

There is the potential for the remnants of this cold air to move eastwards across the Atlantic to affect the UK over the weekend. However, the airmass will become heavily modified by the Gulf Stream, and there is little risk of the extreme temperatures over North America affecting the UK.

Date Created
January 2015

Very strong winds recorded over northern parts of the UK

Description

As forecast by the Met Office, a powerful low pressure system passed to the north of the UK in the early hours of this morning bringing exceptionally strong winds in places.

Two low level stations recorded wind speeds of over 100mph, with the gust recorded at Stornoway being the joint strongest recorded at the site (the other gust at that speed was recorded on 12 February 1962).

While the winds have now dropped significantly, it will stay windy through today in many parts and gusts will increase in strength once again tonight as another low pressure system is set to affect northern parts of the country. You can see detail on this on our forecast and warnings pages.

Below are some of the maxiumum gust speeds recorded during the first storm, between 10pm last night and 9am this morning.

Date and time	Station	Area	Speed (mph)
09/01/2015 03:00	STORNOWAY AIRPORT	WESTERN ISLES	113
09/01/2015 03:00	LOCH GLASCARNOCH	ROSS & CROMARTY	110
09/01/2015 04:00	ALTNAHARRA	SUTHERLAND	97
09/01/2015 06:00	WICK AIRPORT	CAITHNESS	93
09/01/2015 03:00	ALTBEA	ROSS & CROMARTY	90
09/01/2015 01:00	EDINBURGH BLACKFORD HILL	MID-LOTHIAN	90
09/01/2015 00:00	SOUTH UIST RANGE	WESTERN ISLES	90
09/01/2015 05:00	KINBRACE	SUTHERLAND	87
09/01/2015 01:00	SKYE	WESTERN ISLES	86
09/01/2015 07:00	KIRKWALL	ORKNEY	86

The strongest wind in England was at High Bradfield, in South Yorkshire, which saw a gust of 76 mph at 1am this morning.

In Wales, the strongest gust was at Aberdaron, Gwynedd, with 76mph at 11pm last night.

For Northern Ireland, the strongest was 70mph at Killowen, County Down, at 10pm last night.

Winds are almost always stronger at our high level weather stations (those that are sited at 500 metres of altitude or higher), which are also often very exposed. For this reason the winds from those sites are unlikely to reflect what the vast majority of people are experiencing. Bearing that in mind, the strongest gusts from the high level sites are quoted below for reference:

Date and time	Station	Area	Height (metres)	Speed (mph)
09/01/2015 04:00	CAIRNGORM SUMMIT	INVERNESS-SHIRE	1237	140
09/01/2015 00:00	AONACH MOR	INVERNESS-SHIRE	1130	129
09/01/2015 04:00	BEALACH NA BA	ROSS & CROMARTY	773	124
09/01/2015 05:00	GREAT DUN FELL	CUMBRIA	847	107
09/01/2015 05:00	GLEN OGLE	PERTHSHIRE	564	102

Date Created
January 2015

How a strong jet stream is affecting aviation

Description

We often talk about the jet stream and its impacts on UK weather – but it can have an even more direct effect on aviation as covered in the media in recent days.

The jet stream is a band of fast moving winds high up (around 5-7 miles) in the atmosphere. It usually travels eastwards around the northern hemisphere but regularly changes its track and strength.

Pilots travelling east, say from the US back to Europe, use the jet stream to cut journey times and save fuel – just like a cyclist uses a tailwind on a bike.

This has always meant journey times in the northern hemisphere are faster when travelling east than heading west (when airlines avoid the jet stream).

Recently the jet stream has been particularly strong over the north Atlantic, with winds of more than 250mph being seen at times.

You can find out more about the jet stream in our YouTube video:

This has had an impact on flying times – with eastbound trans-Atlantic services arriving well in advance of their scheduled times. Some types of passenger aircraft have reputedly seen record breaking journey times.

All this of course has a knock-on effect for airports as schedules are carefully planned to ensure there's room, not to mention boarding gates, for each aircraft when it's due to land. That has meant the strong jet stream creates a logistical challenge for airports across Europe.

The Met Office has been helping airlines and airports to plan ahead with its forecasts of the strength of the jet stream through its role as a World Aviation Forecasting Centre (WAFC).

There are only two WAFC centres in the world; the UK and Washington, in the US. The two centres provide aviation charts for the globe, highlighting conditions between 10,000 and 63,000 feet.

These charts show the location and strength of the jet stream, as well as other important aviation factors, such as clear air turbulence, cumulonimbus (storm producing) clouds, volcanoes and tropical storms. Both centres operate 24 hours a day and throughout the year.

Airlines use our upper-air wind forecasts to predict flight times at cruising altitude. For transatlantic flights during 2012, the average difference between the predicted flight time and the actual flight time was about one minute. This means that our aviation customers can accurately calculate the fuel load required for each flight. Our WAFC charts save airlines globally £2.7 billion a year because our forecasts help them fly safely and efficiently.

Accurate forecasts enable pilots, airlines and airports to assess flying times in advance and use that information to try to ensure things run as efficiently as possible on the ground.

Date Created
January 2015

Strongest winds overnight 14 – 15 January 2015

Description

As expected, a powerful low pressure system affected the UK yesterday evening and overnight bringing gales and heavy rain to many areas.

The low pressure system will continue to affect the UK today, bringing sunny spells and blustery, heavy showers with the chance of thunderstorms and snow over high ground. Severe gales are again expected around western and northwestern coasts, with the strongest winds likely over Northern Ireland and southwest Scotland, extending to northern Scotland later. You can see detail on this on our forecast and warnings pages.

Below are some of the strongest gust speeds recorded at Met Office observing sites between 7pm yesterday and 7am today.

Strongest gusts 7 pm 14 January 2015 – 7 am 15 January 2015

Date / time	Site		Max Gusts (mph)
15/01/2015 00:00	CAPEL CURIG	GWYNEDD	96
15/01/2015 03:00	WIGHT: NEEDLES OLD BATTERY	ISLE OF WIGHT	93
15/01/2015 00:00	ABERDARON	GWYNEDD	83
14/01/2015 23:00	MUMBLES HEAD	WEST GLAMORGAN	81
15/01/2015 02:00	BERRY HEAD	DEVON	77
15/01/2015 02:00	AVONMOUTH	AVON	76
15/01/2015 03:00	ISLE OF PORTLAND	DORSET	75
14/01/2015 23:00	CULDROSE	CORNWALL	73
15/01/2015 04:00	TIREE	ARGYLL	73
15/01/2015 01:00	LOFTUS	CLEVELAND	70
15/01/2015 01:00	PLYMOUTH, MOUNTBATTEN	DEVON	70
14/01/2015 23:00	SCILLY: ST MARYS AIRPORT	ISLES OF SCILLY	70
15/01/2015 04:00	SOLENT	HAMPSHIRE	69
15/01/2015 01:00	LAKE VYRNWY	POWYS	69
14/01/2015 23:00	NORTH WYKE	DEVON	68
14/01/2015 23:00	SENNYBRIDGE	POWYS	68
15/01/2015 06:00	ISLAY: PORT ELLEN	ARGYLL	68
15/01/2015 00:00	PEMBREY SANDS	DYFED	68
14/01/2015 21:00	DRUMALBIN	LANARKSHIRE	67

15/01/2015 07:00	EDINBURGH, BLACKFORD HILL	MIDLOTHIAN	67

Below are some of the highest rainfall totals recorded at Met Office observing sites between 7pm yesterday and 7am today.

Highest rainfall 7pm 14 January to 7am 15 January 2015

Site		Rain (mm)
ACHNAGART	ROSS & CROMARTY	40.8
TYNDRUM	PERTHSHIRE	39.0
TREDEGAR, BRYN BACH PARK	GWENT	35.8
KESWICK	CUMBRIA	35.0
THREAVE	KIRKCUDBRIGHTSHIRE	31.8
LIBANUS	POWYS	31.8
SHAP	CUMBRIA	31.6
ESKDALEMUIR	DUMFRIESSHIRE	28.2
SKYE: LUSA	WESTERN ISLES	27.8
USK	MONMOUTHSHIRE	27.4
OKEHAMPTON, EAST OKEMENT FARM	DEVON	27.1
STRATHALLAN AIRFIELD	PERTHSHIRE	25.6
GOUDHURST	KENT	25.4
BLENCATHRA	CUMBRIA	25.2
TULLOCH BRIDGE	INVERNESS-SHIRE	24.2
WHITECHURCH	DYFED	24.0
NORTH WYKE	DEVON	23.6
CAPEL CURIG	GWYNEDD	23.4
MIDDLE WALLOP	HAMPSHIRE	23.4
CAMBORNE	CORNWALL	23.0

You can share the weather you have experienced through the ‘Weather Impacts’ section of WOW

The stormy weather we have seen over the last couple of weeks is now coming to an end and conditions over the weekend and into next week look calmer but colder with frosts at night and wintry mix of showers.

Date Created
January 2015

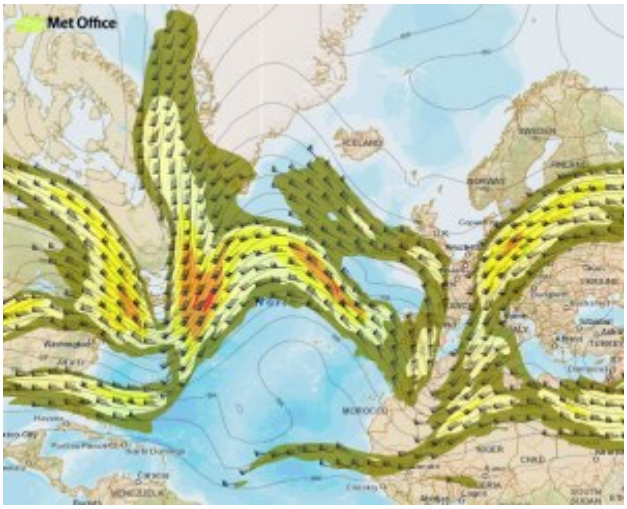
Why are we now seeing colder weather across the UK?

Description

Over recent weeks, we have spoken about the very strong jet stream across the Atlantic, driving areas of intense low pressure towards the UK. This has bought spells of very wet, windy but relatively mild conditions to the country.

As many of you would have noticed, although the wind and heavy rain has eased, there is now a colder feel to the weather, both by day and night. But what has caused this change in the weather?

Once again the change is down to the jet stream. It has weakened and its track has moved further south, keeping the deep low pressure systems away from our shores. However, now the UK is to the north of the jet stream we are on its cold side, and this has allowed colder weather to feed in across the country.



Current jet stream across the Atlantic

So what does this mean for us?

As we look ahead into the weekend and next week, the cold weather looks likely to continue. Daytime temperatures will be near or below average and there will be some frosty nights, as temperatures fall below freezing in many areas. We'll see some sunny spells around and there will also be showers or longer spells of precipitation in places, giving a mixture of rain, hail, sleet or snow, which may settle in some areas.

Because of the threat of wintry weather over the coming days, we encourage everyone to keep up to date with the latest forecasts and national severe weather warnings and to stay weather aware this winter by following the Met Office on Twitter, Facebook, Google+ and YouTube for the latest weather information. You can find information about how to prepare for every aspect of the winter season at Get Ready for Winter.

As we head towards the latter part of the month, we can see some indications that milder weather may return, but there is considerable uncertainty about this so far in advance.

Date Created
January 2015

Cold Weather for UK

Description

Cold weather is again on the way for the UK. Later this week colder conditions will spread south, bringing a mixture of sunny spells and snow showers from Wednesday onwards. Temperatures for many will be below normal for the time of year and the wind chill, due to strong winds, will make it feel very cold.

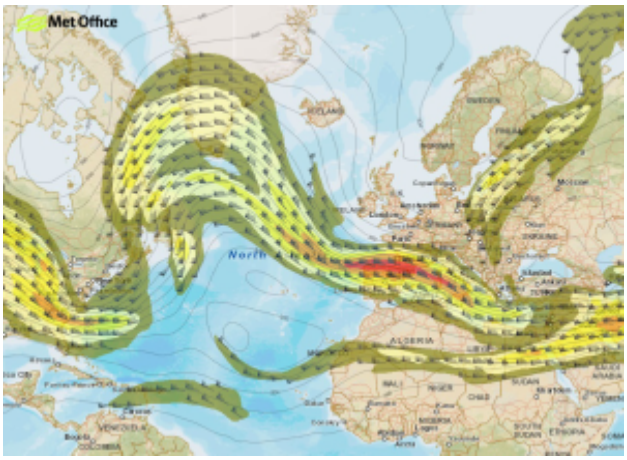
Snow showers are expected to affect parts of the northern half of the UK on Wednesday and Thursday and the Met Office has issued a yellow severe weather warning for the potential impacts and this will be updated as required this week. Don't be surprised to see some snow showers across southern areas too, but these are not currently expected to be heavy enough for the snow to settle. The northerly winds and cold weather are likely to continue into the weekend.

Is it due to the polar vortex?

There have been reports the cold weather is due to a "displaced polar vortex". The large-scale low pressure area in the stratosphere, known as the Polar Vortex, is displaced towards Russia and looks likely to stay that way over the next few days. However this is not directly responsible for changes in the weather during the coming days. The cold northerly winds we are expecting at the end of the week are not unusual for winter.

What is the jet stream doing?

The jet stream is forecast to move south of the UK from Wednesday onwards. This means we will be on the 'cold side' of the jet and cold air from the poles/Arctic will work its way southwards to affect the UK.



Jet Stream forecast map for Saturday showing the track to the south of the UK.

Is the snowstorm in the USA coming our way?

The snowstorm affecting the east coast of the USA is not coming towards the UK. It is expected to move away from the States, crossing the Atlantic to the south of the UK to bring heavy rain to Spain and Portugal at the end of the week.

Date Created
January 2015

Winter storm to hit the U.S.A. and Canada

Description

While we're looking at our own wintry weather later this week, a separate weather system is about to bring some very disruptive winter weather on the other side of the Atlantic.

A low pressure system, which is due to bring the severe conditions to the U.S.A., is currently developing over the southeastern United States. It is expected to deepen very quickly later today. All the ingredients are there: firstly, as it starts to move out over the Atlantic, it taps into the energy provided by warm waters of the Gulf Stream. Secondly, its position relative to the strong jet stream is just right to ensure a rapid development. And thirdly, as it develops, it pulls intensely cold air from Canada into its circulation, which turns much of the rain to snow.

So by Tuesday morning we are expecting an intense depression to be centred off coastal Maine, bringing a combination of hazards. In some areas, especially towards the south and near coasts, heavy rainfall could be an issue but for most places it's going to be the combination of heavy snow and severe gales which lead to truly atrocious conditions – indeed the word "historic" figures in quite a lot of the American press today.

Blizzards are likely to affect many of the northeastern States from Pennsylvania (Philadelphia) up to Maine and crossing over the border into Canada, with major disruption expected for some communities, including potentially larger cities such as New York and Boston.

As well as posing a major hazard for the road network, impacts on air travel are already starting and are only likely to increase, with knock-on effects for areas quite remote from the weather, including some of the European hubs.

The worst of this particular severe weather should be over by Wednesday but the rest of the week stays very cold in the US, with the risk of renewed snowfall later.

Date Created
January 2015